

### Remarks

Reconsideration and withdrawal of the rejections of the claims of the instant application are respectfully requested in view of the foregoing amendments and the following remarks:

Claim 10 has been amended to emphasize that the claimed apparatus is constructed, by virtue of the programmed electronic data processing means of which it is comprised, to carry out the specified steps as a cycle effected batchwise. Cyclic operation has always been claimed, and carrying it out as a batch is disclosed, for example, at line 23 on page 16 of the specification. For these and other reasons discussed below, the prior art neither teaches nor suggests the apparatus of the invention.

#### *The Rejection Based on Chittick is Unfounded*

In his characterization of the primary reference (Chittick U.S. patent No. 4,421,524), the Examiner states (page 2 of the Office Action): "... said reaction apparatus being constructed for effecting a process comprising the following steps, carried out: ..." thereafter substantially repeating the steps enunciated in Applicants' claim. In doing so, however, the Examiner not only omits an essential limitation, but he also distorts the teaching of Chittick.

As pointed out above, the claims of the application have, from the outset, required that the recited steps be carried out cyclically. It is inexplicable, therefore, that the Examiner's characterization of Chittick does not mention any cyclic feature, and that his acknowledgement of other deficiencies of the reference (on page 3 of the Ac-

tion) omits mention of any such disclosure. It is obvious however that cyclic operation is not taught or suggested by Chittick.

It is also obvious that Chittick teaches only continuous (not batchwise) operation. That is reflected, and concisely stated, in the limitations of claim 1 of the patent requiring “replenishing the organic material as it is consumed” and “replacing the charcoal consumed during the process by the char produced by the pyrolysis reaction.”

While the Examiner does acknowledge that Applicant’s claims require the introduction of air, oxygen, carbon dioxide, or steam into each of the apparatus chambers, for effecting reaction with, and at least partial removal of, the carbonaceous residue therein, he cites the disclosure of Chittick at column 4, lines 61-68 as though it provides the necessary teaching. Clearly, however, it does not.

The disclosure at lines 61-64 in column 4 of Chittick reads as follows:

Char is, of course, consumed during this process. However, sufficient additional char is supplied continuously as a byproduct of the pyrolysis of the organic material.

Chittick makes it perfectly clear moreover that char is not consumed as a result of any step of *introducing* air, oxygen, carbon dioxide, or steam into either (much less each), of two reaction chambers of the apparatus, as required by the instant claims (both as a step controlled by the so-programmed electronic data processing means, and also as a structural feature of the apparatus). Rather, Chittick teaches (in the passage at lines 34-50 in column 4):

The volatiles driven off from the organic material during the first step of the process in the first region of the vessel 15, including the carbon monoxide and hydrogen gases, water vapor, and the chars, are then passed through the second region of the vessel 15.

\* \* \*

The hydrogen and carbon monoxide gases pass through the char unaffected. The water vapor is converted by the heat in its passage through the char to a mixture of carbon monoxide and hydrogen according to the following formula:

at which point Chittick simply sets forth the formula for the rudimentary char gasification reaction in which carbon and water *supplied solely by the feedstock* react at elevated temperatures to form carbon monoxide and hydrogen.

Furthermore, Chittick makes it clear that the char-consumption reaction has absolutely nothing to do with “at least partial removal of ... carbonaceous residue” in the first region of the vessel 15, and is entirely incidental in the second region. Indeed, he expressly points out, presumably as a benefit of his method (possibly because it provides the only material ostensibly having catalytic activity), that “sufficient additional char is supplied continuously.” Thus, there is no net reduction of any carbonaceous deposit, causing Chittick to teach directly *against* essential features of the present invention.

Although it would be evident to those skilled in the art, Applicants might nevertheless point out that there are significant reasons why their apparatus must be constructed for removal, in the course of *each cycle* of operation, of carbonaceous residues from both chambers of which it is comprised. Most fundamentally, removal of

the carbonaceous residue from the first chamber is necessary to recover its full physical capacity, in preparation for efficient processing of the subsequent batch. Removal of carbonaceous residue from the second chamber serves to maintain catalytic activity therein at its highest level, to optimize the efficiency of the apparatus while also recovering physical capacity.

The secondary references relied upon by the Examiner to reject the instant claims do not cure the fundamental deficiencies of Chittick. It is respectfully submitted that there is no proper basis for the Examiner's contention that the claims of the application (or any of them) would have been obvious to one of ordinary skill in the art over the references applied.

*The Programmed Electronic Data Processing  
Means Comprises the Apparatus of the Invention*

The Examiner persists in fallaciously applying to the instant claims the principle, enunciated on page 4 of the Office Action, that "... neither the manner of operating a disclosed device nor material or article worked upon further limit an apparatus claim." As pointed out previously (and apparently with some success, in view of the Examiner's reliance upon the newly cited patent to Chambert), that principle simply does not apply here.

The Examiner also states, on page 7 of the Action, that "Applicant's (sic.) arguments with respect to Claims 10 and 12-17 ... are moot in view of the new ground(s) of rejection. Indeed, the arguments previously presented are hardly moot,

as has already been demonstrated. Accordingly, they are at least in part repeated below:

It is essential to recognize that electronic data processing means, programmed to effect specific functions, is an *apparatus* limitation of the claims, to which full weight must be accorded, *inclusive of the particular functions* by which the programmed electronic data processing means is characterized. It is respectfully submitted that a failure to do so would constitute a fundamental error of law, and would necessarily lead to an incorrect conclusion as to the patentability of Applicants' invention.

Applicants do not merely recite a manner of operating disclosed apparatus, nor do they merely recite a material or article worked upon. Rather, the claims of the application recite electronic data processing means that is expressly programmed to effect specified functions. Those programmed specified functions reside in and alter the memory of the electronic data processing means, and constitute a *physical* feature thereof. The electronic data processing means, so programmed, must therefore be accorded full weight in assessing the patentability of the claimed apparatus.

In discussing the issue at section 2106, the MPEP cites *In re Lowry*, 32 F.3d 1579, 153-84, 32USPQ2d 1031, 1035 (Fed. Cir. 1994). The court in *Lowry* held: "If a machine is programmed in a certain new and nonobvious way, it is *physically different* from a machine without that program." (emphasis added) Clearly, the programmed electronic data processing means here claimed imparts physical features to the power generation apparatus, and constitute a fundamental component thereof.

Those functions of the programmed electronic data processing means cannot properly be dismissed as constituting a mere “manner of operating a disclosed device nor material or article worked upon,” as the Examiner has done. To the contrary, they contribute fundamentally to the novelty and nonobviousness of the instant invention.

#### *Other Errors in the Rejections*

The Examiner has acknowledged that Chittick does not suggest the use of electronic data processing means, but he has asserted (page 4 of the Action) that it would have been obvious, to one of ordinary skill in the art, to modify Chittick by employing the data processing means taught by Moriarty et al. “... for the purpose of increasing system flexibility and improving operation efficiency by allowing production of products having desired unique composition.” He also contends that Moriarty teaches that varying process conditions will affect product composition (which is, of course, self-evident), and that a system for controlling product composition will *inherently* include data processing means for controlling the steps of the process (which is certainly an overly broad and unsupportable statement).

Applicants continue to disagree that it would have been obvious to incorporate electronic data processing means into the apparatus of Chittick, and they submit that the Examiner’s contention that it would be obvious to do so (or beneficial – or indeed feasible) is entirely conjectural. In any event, and as is fully discussed above, the prior art is entirely devoid of any teaching of or suggestion for utilizing the pro-

grammed electronic data processing means that is defined in the instant claims, and that characterizes the apparatus of Applicants' invention.

Chittick discloses only a continuous process, which is carried out with no ostensible concern for control and with no suggestion that any product should be analyzed to enable variation of any parameter. Indeed, there is no basis for concluding that any significant parameter of the Chittick process is susceptible of control. It is noted that Claims 19 and 20 recite the programming of the data processing means for controlling operating parameters from the first and second stages of the apparatus, such as flow rates of gases and temperatures (see page 16, lines 7-11). It can be *speculated* that, if any changes were to be made in order to modify the products obtained, Chittick might analyze the properties of the *solid phase* exiting the reactor. But doing so would introduce complex control problems and would, in any event, hardly suggest the monitoring of the formation of one or more gas phase products to enable computer control of the steps carried out utilizing the instant apparatus.

The fact that Moriarty et al. may teach that variant process conditions will affect product composition is virtually irrelevant, since such general information constitutes nothing more than fundamental knowledge possessed by the person of ordinary skill in the art. If the reference were to bear upon Applicants' invention, and if it were even arguably to be legitimately utilized in combination with Chittick, Moriarty et al. would have to teach the use of computer control of steps that are the same as or equivalent to those for which Applicants' apparatus is constructed, based upon gas monitoring, and it would have to do so moreover in a system that is sufficiently simi-

lar to that of Chittick to be logically (or indeed, reasonably) employed therewith. None of those conditions apply, and consequently the combination of references is wholly inadequate to provide a disclosure of or suggestion for the claim limitations here in question.

It is essential to note furthermore that Moriarty et al. does not teach anything about the use of *feedback* control of a process in which process measurements are used to change process conditions in real time. The reference also does not teach anything about intelligent process control, which can be accomplished using artificial neural networks in which a control system can learn, and improve itself.

Moriarty et al. teaches only that, by changes in temperature, auger speed and flow rate, “the composition of the char or charcoal and other products may be varied.” The focus of the patent is clearly on the properties of the char, with the gases being treated merely as by-products. In contrast, gases are the primary products of the instant method; carbon-rich char is a by-product.

The newly cited patent to Chambert does not cure the fundamental deficiencies of Chittick and Moriarty et al., nor is it congruent with Chittick. It is self-evident that a computer can be used to control fuel, air and temperature. And despite uncertainty about what is meant by “inherently control monitor formation of at least one gas phase product,” it is clear that the proposed combination of references fails to suggest the programmed electronic data processing means, comprising Applicants’ apparatus, and the features of the apparatus that enable the required steps to be carried out.



It might also be observed that the citation of Chambert refutes the Examiner's contention (on page 4) that it would have been obvious from Moriarty et al. to employ data processing means for controlling steps in the Chittick process. If that were so, why should the Examiner have found it necessary to cite Chambert?.

The dependent claims of the application are patentable for the reasons set forth previously and hereinabove. Claim 20 has been amended simply to define the nature of a system in which operation in a closed-loop mode would most suitably occur. In this regard, however, it should be noted that Cawfield discloses a feedback system but not a closed loop mode of operation.

In view of the foregoing, it is respectfully submitted that all claims of the instant application aptly define an apparatus that is novel and patentable over the prior art. Passage of the application to allowance is believed to be clearly in order, and is earnestly solicited.

Accompanying this Amendment is a Petition for Extension of Time, together with Form-2038, authorizing payment of the requisite fee. Please charge any deficiency in the payment to Deposit Account 502982.

Respectfully submitted,  
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By: 

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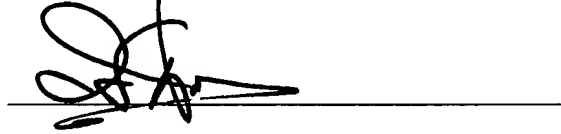
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CERTIFICATE OF MAILING

I, IRA S. DORMAN, hereby certify that this correspondence is being deposited with the United States Postal Service as First Class Mail, postage prepaid, in an envelope addressed as set forth on the first page hereof, on September 18, 2006.

A handwritten signature in black ink, appearing to be "Ira S. Dorman", is written over a horizontal line.